

REMARKS

Applicant appreciates the thorough examination of the present Application that is reflected in the Official Action of August 2, 2007. Applicant respectfully submits, however, that the Official Action appears to erroneously conclude that using a Time Division Multiple Access (TDMA), Frequency Division Multiple Access (FDMA) and/or Code Division Multiple Access (CDMA) protocol, as described in the cited passages of U.S. Patent Application Publication 2005/0260948 to Regulinski et al., equates to using a given frequency to provide both uplink and downlink communications, as recited in all pending independent claims of the present Application. Applicant will show below that all of the pending independent claims specifically recite using the same frequency to provide both uplink and downlink communications in Time-Division Duplex (TDD) mode, and that these claim recitations are simply not described or suggested by the cited passages and figures of Regulinski et al. Furthermore, Applicant will show below that the cited passages of U.S. Patent Application Publication 2005/0260948 to Regulinski et al. teach away from using the same frequency to provide both uplink and downlink communications. Accordingly, Applicant respectfully requests reconsideration and allowance of the present Application for the reasons that will now be described.

The Non-Statutory Obviousness-Type Double Patenting Rejection Has Been Overcome

Claims 1-42 stand rejected under the judicially created doctrine of obviousness-type double patenting over Claims 12 and 21-26 of parent U.S. Patent 6,684,057. In response, a Terminal Disclaimer is being filed concurrently to overcome the non-statutory obviousness-type double patenting rejection. Applicant wishes to note, however, that this Terminal Disclaimer is being filed for the sole purpose of advancing the present Application to allowance. The filing of this Terminal Disclaimer shall not be construed as an admission that the claims are unpatentable under the judicially created doctrine of obviousness-type double patenting or are obvious under 35 USC §103. In view of the above, Applicant requests withdrawal of the obviousness-type double patenting rejection.

Claims 1-42 Are Patentable

Claims 1-42 stand rejected under 35 USC §102(e) over Regulinski et al., under 35 USC §103(a) over Regulinski et al., or under 35 USC §103(a) in view of Regulinski et al. in

combination with a secondary reference. However, Applicant will now show that all of the independent claims specifically recite using the same frequency to provide uplink and downlink communications in TDD mode, whereas the cited passages of Regulinski et al. describe TDMA/FDMA/CDMA, but do not describe or suggest using the same frequency to provide uplink and downlink communications in TDD mode.

In particular, as is well known to those having skill in the art, including the Examiner, TDD is a scheme in which uplink and downlink transmissions are separated so as to not overlap in time. The use of a special kind of TDD by an ancillary terrestrial network is recited in detail in each of the independent claims. For example, independent Claim 1 recites:

A satellite radiotelephone system comprising:
a space-based component that is configured to receive wireless communications from radiotelephones in a satellite footprint over an uplink satellite radiotelephone frequency and to transmit wireless communications to the radiotelephones over a downlink satellite radiotelephone frequency; and
an ancillary terrestrial network that is configured to transmit wireless communications to, and receive wireless communications from, the radiotelephones over the downlink satellite radiotelephone frequency in a time-division duplex mode. (Emphasis added.)

Thus, Claim 1 recites that wireless communications are both transmitted and received by an ancillary terrestrial network over the same downlink radiotelephone frequency in TDD mode. The remaining independent Claims 8, 15, 22, 29 and 36 contain similar recitations which will not be reproduced herein in the interest of brevity.

Also note Figure 13 of the present Application, wherein a given downlink frequency f_D is used for both transmitting and receiving between an ancillary terrestrial component **140** and a radiotelephone **120b**, as clearly shown by the double-headed arrow in Figure 13.

Finally, also note Page 21, line 32-Page 22, line 6 of the present Application:

More specifically, these satellite radiotelephone systems and methods **1300** include a space-based component **110** that is configured to receive wireless communications from radiotelephones, such as the radiotelephone **120a**, in a satellite footprint **130** over an uplink satellite radiotelephone frequency f_U and to transmit wireless communications to the radiotelephones, such as the radiotelephone **120a**, over a downlink satellite radiotelephone frequency f_D . An ancillary terrestrial network including at least one ancillary terrestrial component **140** is configured to transmit wireless communications to, and receive wireless communications from, the radiotelephones, such as the radiotelephone

120b, over the downlink satellite radiotelephone frequency f_D in a time-division duplex mode.

These embodiments of the invention may arise from a recognition that if a downlink satellite radiotelephone frequency f_D is reused terrestrially in time-division duplex mode, bidirectional communications between the ATC 140 and the radiotelephones 120 may be provided without generating a potential interference path with space-based communications at the satellite 110 and/or the gateway 160. Stated differently, comparing Figures 4 and 13, the potential interference path 150 of Figure 4 can be reduced and, in some embodiments, eliminated, by using the downlink satellite radiotelephone frequency f_D for time-division duplex communications between the ATC 140 and the radiotelephones 120. (Emphasis added.)

As is well known to those having skill in the art, including the Examiner, the term TDMA refers to a multiple-access technology that enables a plurality of users to communicate over a common carrier by allocating different time slots to different users within a transmission frame. The label "TDMA," in itself, implies nothing about the frequencies used to transmit and to receive. TDMA is embodied by the well-known GSM system. The GSM system also embodies the principle of TDD because any given GSM radiotelephone is not allowed to transmit and receive at the same time. However, even though transmitting and receiving in GSM is based upon TDD and TDMA principles, transmitting and receiving in GSM uses different, non-overlapping frequency bands. Thus, as is clearly illustrated by GSM, labeling a protocol as TDD and/or TDMA does not imply using the same frequency to transmit and receive. GSM is both TDD and TDMA and uses different frequencies to transmit and receive.

Moreover, FDMA refers to a multiple access technique that enables a plurality of users to communicate by allocating different frequencies to different users. Finally, CDMA refers to a technique that uses direct sequence spread spectrum technology to enable multiple users to gain access to a network by allocating different spreading codes to different users. Thus, although TDMA, FDMA and CDMA can provide various techniques of multiple user access to wireless communications networks, those skilled in the art, including the Examiner, will appreciate that the labels TDMA, FDMA and/or CDMA generally do not imply or suggest using the same frequency to provide uplink and downlink communications. In fact, as those skilled in the art, including the Examiner, will appreciate, the contrary is true: The labels TDMA, FDMA and/or CDMA generally imply using different uplink and downlink frequencies. In sharp contrast the pending independent claims of the present Application,

recite that wireless communications are both transmitted and received by an ancillary terrestrial network over the same downlink satellite radiotelephone frequency.

The cited passages of Regulinski et al. are entirely consistent with the conventional definitions of TDMA, FDMA and/or CDMA, and do not suggest the use of a same frequency for transmitting and receiving in TDD, as recited in the present independent claims. Furthermore, Figure 6 of Regulinski et al. clearly illustrates a terrestrial downlink frequency band and a terrestrial uplink frequency band that use portions of a satellite downlink frequency band. However, the terrestrial downlink frequency band and the terrestrial uplink frequency band are clearly separated from one another in Figure 6, and do not overlap in frequency. The use of the same satellite downlink frequency for terrestrial uplink and downlink is not described or suggested. Similarly, in Regulinski et al. Figure 7, the terrestrial uplink frequency band overlaps with the satellite uplink frequency band, and the terrestrial downlink frequency overlaps with the satellite downlink frequency band. However, the terrestrial uplink frequency band is clearly separated from the terrestrial downlink frequency band and does not overlap it in frequency. The use of the same satellite downlink frequency for terrestrial uplink and downlink is not described or suggested.

Similarly, in Figure 9 of Regulinski et al., the terrestrial downlink frequency band overlaps with the satellite uplink frequency band, and the terrestrial uplink frequency band overlaps with the satellite downlink frequency band. However, the terrestrial downlink frequency band is separated from the terrestrial uplink frequency band, and does not overlap therewith. The use of the same satellite downlink frequency for terrestrial uplink and downlink is not described or suggested. Finally, Figure 10 of Regulinski et al. illustrates a terrestrial downlink frequency band and a terrestrial uplink frequency band that overlap with the satellite uplink frequency band. Yet again, however, the terrestrial downlink frequency band is spaced apart from the terrestrial uplink frequency band and does not overlap therewith. The use of the same satellite downlink frequency for terrestrial uplink and downlink is not described or suggested.

In fact, Figures 6, 7, 9 and 10 of Regulinski et al. are consistent with the GSM (TDMA) and/or CDMA standards, which are used for conventional terrestrial cellular communications, wherein different frequency bands are used for downlinks and uplinks, and the same frequency is not used for both uplink and downlink frequencies in a TDD mode. Paragraph [0180] of Regulinski et al. refers to "certain existing terrestrial networks" as using

TDD. But, there is no indication that these networks use the same frequency to both transmit and receive wireless communications, as recited in all of the pending independent claims of the present Application. As was shown above, GSM certainly falls into the category of “certain existing terrestrial networks” that use TDD but GSM does not use the same frequency to transmit and receive.

In summary, a communications protocol that is based upon TDMA, FDMA and/or CDMA does not necessarily imply or suggest using the same frequency to provide downlink and uplink communications. An example of a protocol that is based upon both TDMA and TDD principles but does not use the same frequency to provide downlink and uplink communications is GSM. In accordance with the GSM protocol, as is well known to those having skill in the art, including the Examiner, a radiotelephone is never allowed to receive and transmit at the same time; that is, the GSM radiotelephone operates in accordance with the Time Division Duplex (TDD) principle of non-overlapping (in time) transmissions and receptions. However, as is also well known to those having skill in the art, including the Examiner, a GSM radiotelephone receives information over a downlink frequency from a base station, and transmits information to the base station over an uplink frequency that is different from the downlink frequency. Furthermore, as is well known to those having skill in the art, including the Examiner, the GSM protocol is also a TDMA protocol. Thus, labeling a protocol TDD and/or TDMA does not necessarily imply that the protocol uses the same frequency to provide downlink and uplink communications. Similar statements can be made relative to conventional FDMA and/or CDMA protocols. In sharp contrast, each of the pending independent claims of the present Application specifically recites that a given downlink satellite radiotelephone frequency is used to both transmit wireless communications and receive wireless communications from the radiotelephones in a TDD mode.

As was also shown above, Regulinski et al. discloses four different embodiments of frequency reuse of satellite band frequencies by a terrestrial network. These four different embodiments, illustrated in Figures 6, 7, 9 and 10 of Regulinski et al., were analyzed in detail above. Each one of the four different embodiments appears to represent frequency reuse of the satellite band frequencies by the terrestrial network based upon Frequency Division Duplex (FDD) principles, wherein the terrestrial downlink frequency band is separate from and non-overlapping with the terrestrial uplink frequency band. Regulinski et al. does not

describe or suggest using the same satellite frequency by a terrestrial network to provide both uplink and downlink communications.

In fact, each of Figures 6, 7, 9 and 10 of Regulinski et al. appears to teach away from using the same satellite frequency by a terrestrial network to provide uplink and downlink communications. Moreover, Paragraph [0180] of Regulinski, et al., which mentions TDD as in certain existing terrestrial networks also does not describe or suggest "an ancillary terrestrial network that is configured to transmit wireless communications to, and receive wireless communications from, the radiotelephones over the downlink satellite radiotelephone frequency in a time-division duplex mode", as recited in independent Claim 1, and analogous recitations of the other independent claims. Thus, although Regulinski et al. appears to recognize the value of configuring a terrestrial network to reuse satellite band frequencies and to provide communications using a variety of protocols, such as GSM, CDMA, FDD and/or TDD, Regulinski et al. does not appear to recognize the value of configuring the terrestrial network to provide both uplink and downlink communications using the same satellite frequency. All of the Regulinski et al. figures that illustrate frequency reuse by the terrestrial network of satellite band frequencies appear to teach against configuring the terrestrial network to provide both uplink and downlink communications using the same satellite band frequency, as recited in each of the pending independent claims. For at least these reasons, independent Claims 1, 8, 15, 22, 29 and 36 are patentable over Regulinski et al. The dependent claims are patentable at least per the patentability of the independent claims from which they depend.

Many of the Dependent Claims Are Independently Patentable

Many of the dependent claims are separately patentable. However, in the interest of brevity and in view of the clear patentability of the independent claims, the dependent claims will not be analyzed separately. Applicant reserves the right to do so, however, in a subsequent response as necessary.

Final Note Regarding Terminology

As described extensively above, all of the independent claims recite that a frequency is used to transmit wireless communications and receive wireless communications from, a radiotelephone over a downlink satellite radiotelephone frequency in a TDD mode.

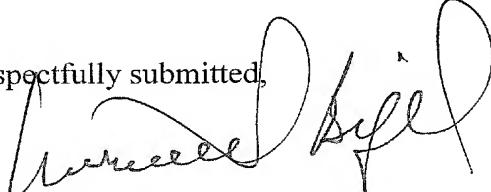
However, if the Examiner can suggest amendments to the claim language that can help clarify that the ancillary terrestrial network is configured to transmit wireless communications to and receive wireless communications from the radiotelephones over the same downlink radiotelephone frequency in a TDD mode, Applicant would be amenable to making any such changes so that the Examiner is satisfied with the clarity of the claims. Applicants are hesitant to make any such changes, because the present claim recitations are concise, consistent with the drawings and specification, and patentably distinguish over Regulinski et al.

Conclusion

Applicant has now shown that Regulinski et al.'s descriptions of TDMA/FDMA/CDMA/TDD do not describe or suggest the recitations of the pending independent claims of the present Application and, in fact, teach away from the recitations thereof. Accordingly, Applicant respectfully requests withdrawal of the outstanding rejections and allowance of the present Application.

If, in the opinion of the Examiner, a telephonic conference would expedite the examination of this matter, the Examiner is invited to call the undersigned attorney at (919) 854-1400.

Respectfully submitted,



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Date of Signature: September 5, 2007